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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,826	04/26/2005	Hiroyuki Katayama	0033-0999PUS1	8798
2292 7590 09/18/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER DOERRLER, WILLIAM CHARLES	
			ART UNIT 3744	PAPER NUMBER
			NOTIFICATION DATE 09/18/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

## Office Action Summary

Application No.

10/532,826

Applicant(s)

KATAYAMA ET AL.

Examiner

William C. Doerrler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,5,8-11 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,5,8-11 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3-8-05, 4-26-05, 3-8-06, 4-17-07.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Priority*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2,8,9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al (5,746,269) in view of Tanaka et al (6,474,075).

Torii et al discloses applicants' basic inventive concept, a regenerator for a cryogenic cooler formed by stacking plates with raised, perforated portions, substantially as claimed with the exception of forming the plates from a resin and pressing the

projections into the stacks. Tanaka et al shows these features to be old in the regenerator forming art in lines 55 and 66 of column 3. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Tanaka et al to modify the regenerator of Torii et al by forming the stacks from a resin to make the device economical and easily formed and to press the projections into the material to produce the stacks relatively easily and economically (while forming indents which will assist fluid interaction). Figure 8 of Tanaka et al shows the regenerator having different densities of projections in different areas of the regenerator.

Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al in view of Tanaka et al as applied to claims 2,8,9 and 11 above, and further in view of Yaron et al (5,429,177).

Torii et al, as modified, discloses applicants' basic inventive concept, a stack or resin plates with projections to form a regenerator for a cryogenic cooler, substantially as claimed with the exception of forming parts of the projections higher than others. Figure 17 of Yaron et al shows a regenerator with parts 16 having different sizes in different parts of the regenerator. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Yaron et al to modify the regenerator of Torii et al by forming the projections in part of the regenerator higher to provide different flow characteristics to different portions of the regenerator.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Torii et al in view of Tanaka et al as applied to claims 2,8,9 and 11 above, and further in view of Aull et al (6,640,427).

Torii et al, as modified, discloses applicants' basic inventive concept, a stack or resin plates with projections to form a regenerator for a cryogenic cooler, substantially as claimed with the exception of disclosing a machine that produces the device. Aull et al shows a device which presses plastic (the paragraph beginning in line 43 of column 5 gives the materials that can be used) by forming projections of various heights (the paragraph beginning on line 19 of column 21 discuss the height adjustment means). It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Aull to form the regenerator formed of a resin with projections of different heights using a machine which can press different height projections into plastic to produce the device with limited work performed by workers to produce consistent product quickly.

### ***Conclusion***

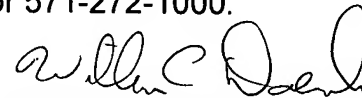
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanaka '632 and Mitchell show regenerators with raised projections. Duryee et al shows a regenerator formed by stacking plates. Jonkers shows a heat exchanger with perforated projections formed in plates. Bloem shows a regenerator. Aull et al '628 shows a forming machine for projections into plates. Modesto et al shows an automatic forming machine.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William C Doerrler  
Primary Examiner  
Art Unit 3744

WCD